

Transforming Assessments of Clinician Knowledge: A Randomized Controlled Trial Comparing Traditional Standardized and Longitudinal Assessment Modalities

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Objectives

- Compare and contrast knowledge versus competence.
- Historical methods of assessing CRNA knowledge.
- Discussion around our RCT evaluating present two methods of knowledge assessment for CRNAs.
- Understand how study findings linked to development of new continued certification program.



Baseline Concepts

Knowledge Versus Competence

- Knowledge – largely theoretical information – diseases, treatments, procedures, and guidelines.
- Competence – inclusive of practical skills, judgement, and behaviors of a profession.



Entry to Practice

- Knowledge mastery required to enter and begin baseline competent.
- Most often measured by standardized examinations.
- Passes the public “litmus test”.

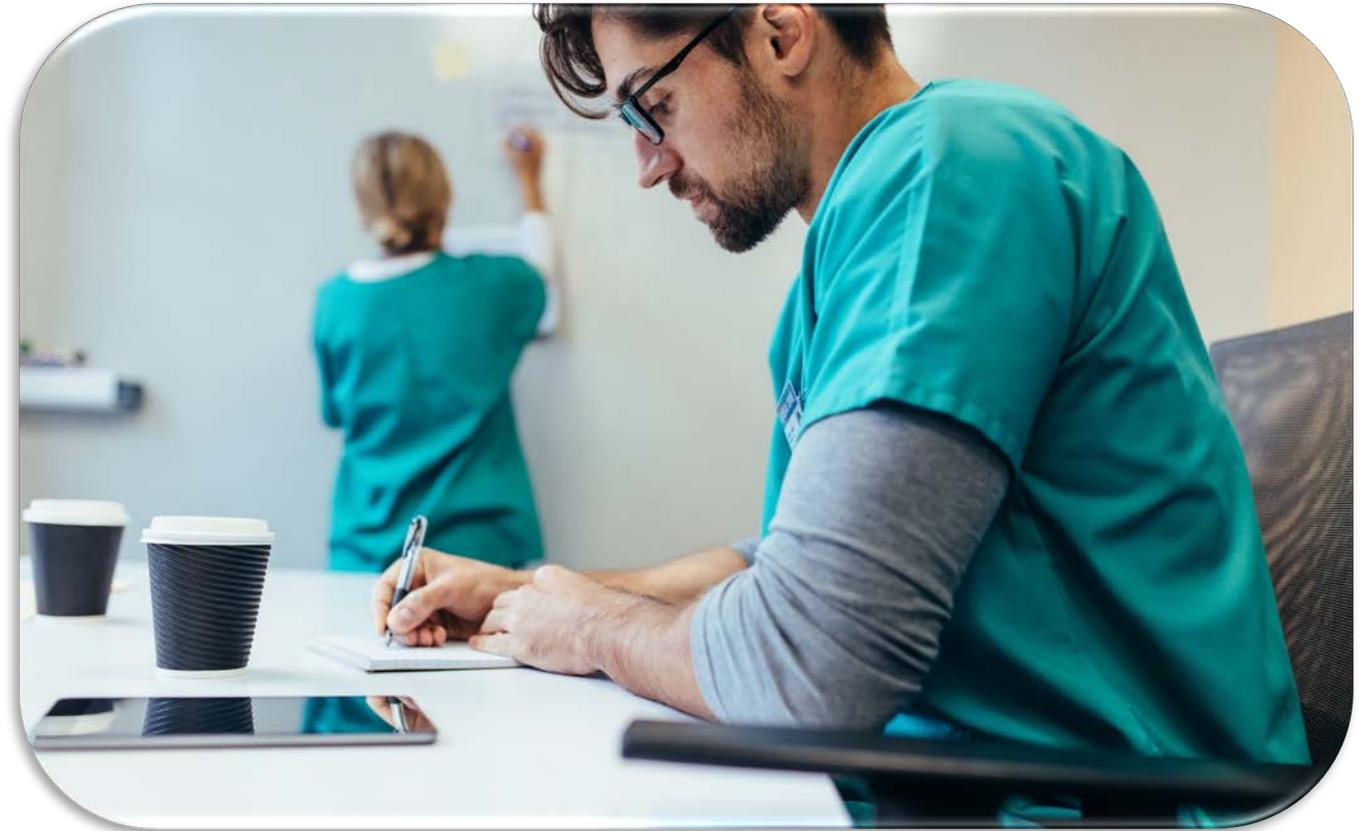


Continued Practice

- Is there a best practice?
- Do the same mechanisms capture what continued practice requires?
- What happens when current programs fall short of stated goals?

Current Mechanisms

- CEUs
- Standardized exams
- Simulation
- Portfolio submission



Ideal Characteristics for Clinical Professionals

- Practical for practicing clinicians.
- Identifies strengths and liabilities.
- Suggests personalized educational opportunities.

Our Past

The Legacy Recertification Program



Verify contact information (name, address, phone, and email)



Practice & Licensure requirements and information



A minimum of 40 continuing education (CE) credits

Present Day

Why did the NBCRNA change from the legacy Recertification Program to the contemporary Continued Professional Certification?



Changing Accreditation Requirements

for NBCRNA and for others



Changing Needs

changing knowledge and skills

recognizing activities we already do



Technology

new opportunity



Class A Credit

Similar to past CE

60 credits per four-year cycle; average 15/year

Prior-approved

Includes an assessment

Can use “extra” Class A credits over the required 60 as Class B

Class B Credit

- They are not CE, but rather professional development activities (extra Class A credits over the required 60 as Class B)
- No assessment or prior approval required
- 40 credits per four-year CPC cycle
- Supports patient safety, enhances knowledge of nurse anesthesia, relates to broader health care environment
- Track on your own

Continued Professional Certification Assessment (CPCA)

Not like the NCE

CPCA focuses on clinical knowledge of **experienced** CRNAs

Knowledge common to all CRNAs, regardless of practice focus

Content outline available on NBCRNA website

CPCA

Will not lose certification. Take additional focused CE if performance standard not met – CRNA's choice of type and quantity (min. 1 CE)



No additional CE if meet standard



Most CRNAs will take the first assessment by 2024/2025
(but SHOULD take it ASAP)

Are We Making a Critical Error From the Start?

- CRNAs are thus “launched” into practice with the assumption that the capabilities they demonstrate on entry into practice will remain at or above acceptable levels of performance until they retire

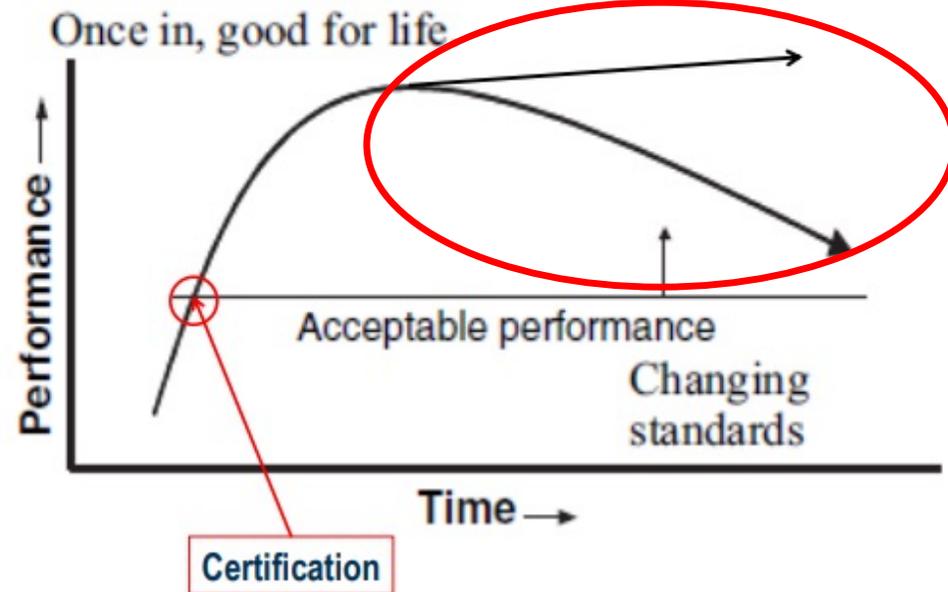


Competency for Lifelong Learning

Domain	Key competencies
Knowing one's practice	Ability to use practice information to <ul style="list-style-type: none"> • identify learning priorities • develop and monitor CPD plans
Scanning the environment	Ability to access information sources for <ul style="list-style-type: none"> • innovations in development • new evidence for potential integration into practice
Managing learning in practice	Ability to establish a personal knowledge management system to <ul style="list-style-type: none"> • store and retrieve evidence • select and manage learning projects
Raising and answering questions	Ability to <ul style="list-style-type: none"> • construct a question • search for evidence • record and track conclusions for practice
Assessing and enhancing practice	Ability to <ul style="list-style-type: none"> • use tools and processes to measure competence and performance • develop action plans to enhance practice

Concern for Competence Over Time

Outcomes: Competence drops over time



Setting the Stage for the Future

- **Let's make some assumptions:**
 - CRNA education has not traditionally focused on acquiring skills to be a life-long learner but has focused on becoming expert clinicians.
 - People, by-and-large, gravitate toward learning they don't necessarily need.
 - CRNAs must enter practice with a set of learning competencies that will enable them to critically assess and revise their practice to make sense of complex situations and learn from experience.

Our Future

What is Longitudinal Assessment (LA)?

- Is simply a cross sectional methodology that seeks to apply principles of adult learning to measuring knowledge.
- Even more basically it can be thought of as a tool that evaluates individual knowledge dynamically.
- Often applied to practicing clinicians as a set number of questions per time-period.
- Shorter periodic assessments with immediate feedback and rationales have show significant promise in helping practicing clinicians increase understanding of topics and reinforce knowledge.

Adult Learning Principles in LA

- Learning linked to testing effect (frequent repetitive exams).
- Spaced learning (exposure to materials interspersed with other activities).
- Interleaving subject matter (simultaneous presentation of different topics).
- Providing instant/immediate feedback.
- Learning through repetition.
- Offering convenience in learning platform.
- Self direction/determinism (to a point).

Our Study Aims

1. Compare pass rates and mean scaled scores on the assessment among CRNAs in the traditional assessment (TA) group as compared to the LA group.
2. Discern differences in perceptions and attitudes using agreement Likert scales for those in TA versus LA groups which included satisfaction and promotion of lifelong learning.
3. Describe the LA participants experience and engagement using data triangulation.

Primary Research Aims

Compare	Compare CRNA performance between the CPCA-LA and CPCA participants.
Compare	Compare perceptions and attitudes between the CPCA-LA and CPCA participants.
Describe	Describe participant feedback about the CPCA-LA platform.

Requirements TA Versus LA Groups

- TA – must take and complete a single three-hour, 150 questions assessment either in person through a Pearson VUE test center or online using a live remote proctor (PVue) prior to study completion.
- LA – answer a total of 135 questions
 - Quarter 1 – April 4 to July 4, 2022 (91 days)
 - Quarter 2 – July 5 to October 2, 2022 (89 days)
 - Quarter 3 – October 3, 2022, to January 2, 2023 (91 days)
 - Quarter 4 – January 3 to March 31, 2023 (87 days)

TA and LA Similarities

- All questions were developed using the same item bank.
- The question distribution was similar and used the same content outline.
- Though different sets of questions from one item bank were used, scores were equated using a common Rasch scale.

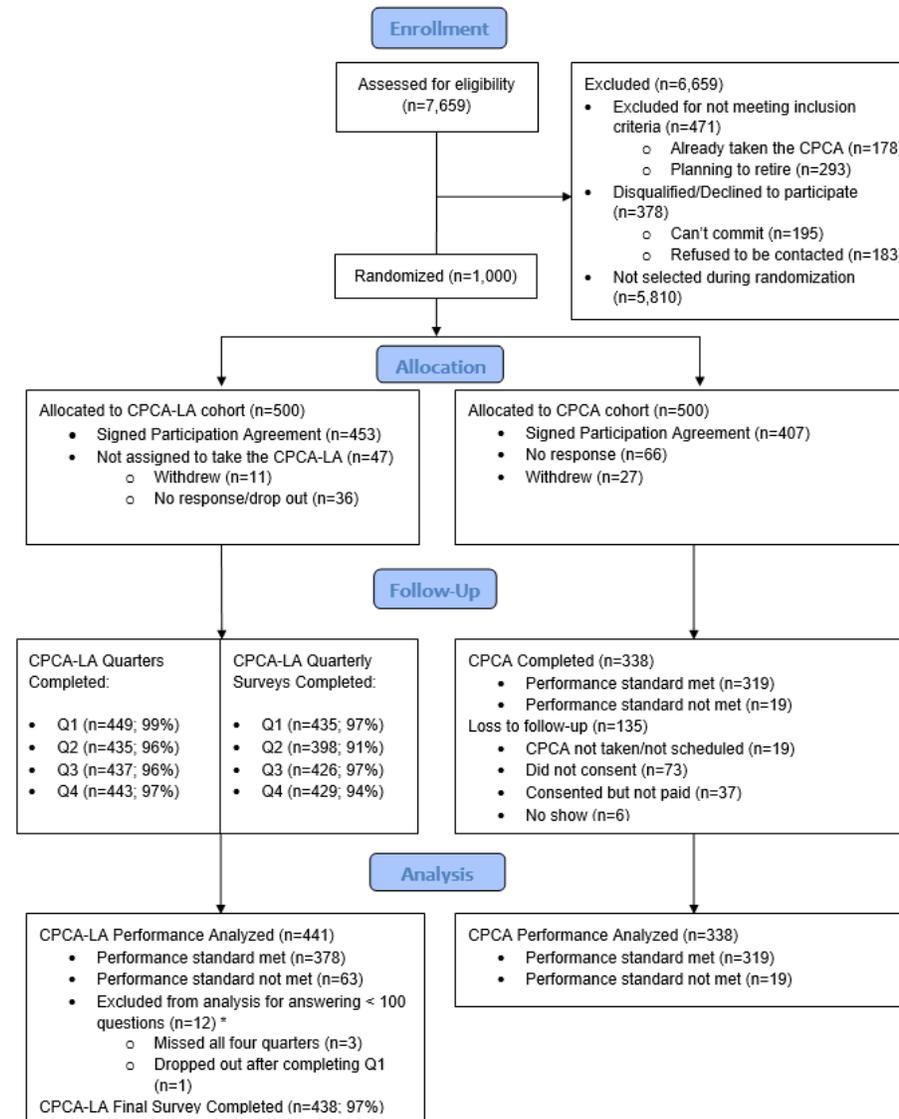
Outcome Measures

- Performance
- Perceptions and attitudes
- LA focus groups
- Participant engagement and usability

Participant Recruitment



LA Research Study Flow Diagram



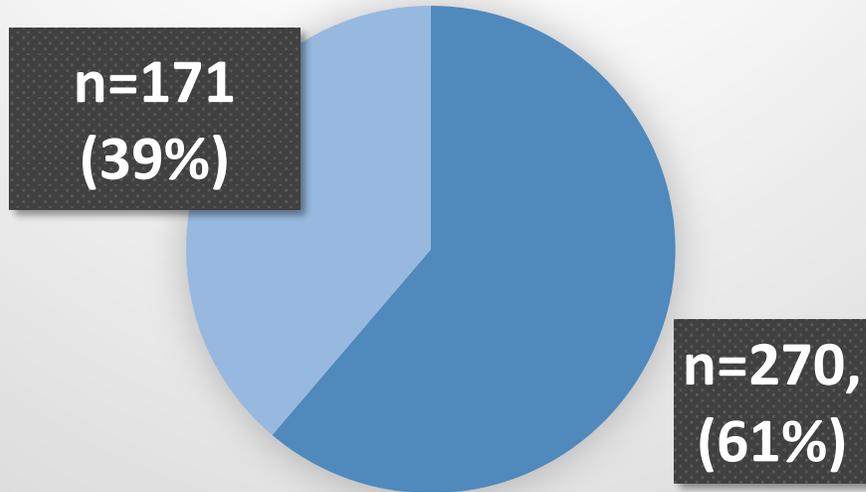
Participant Demographics



Gender

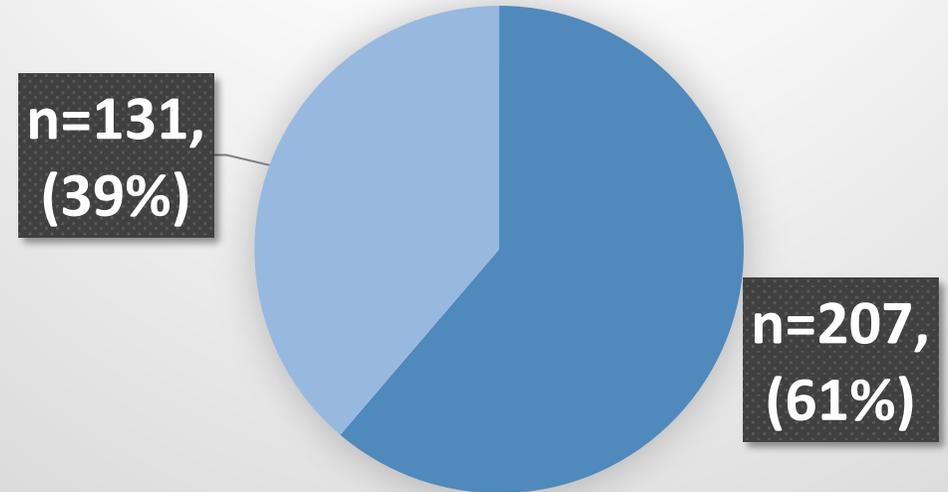
CPCA-LA (n=441)

■ Female ■ Male

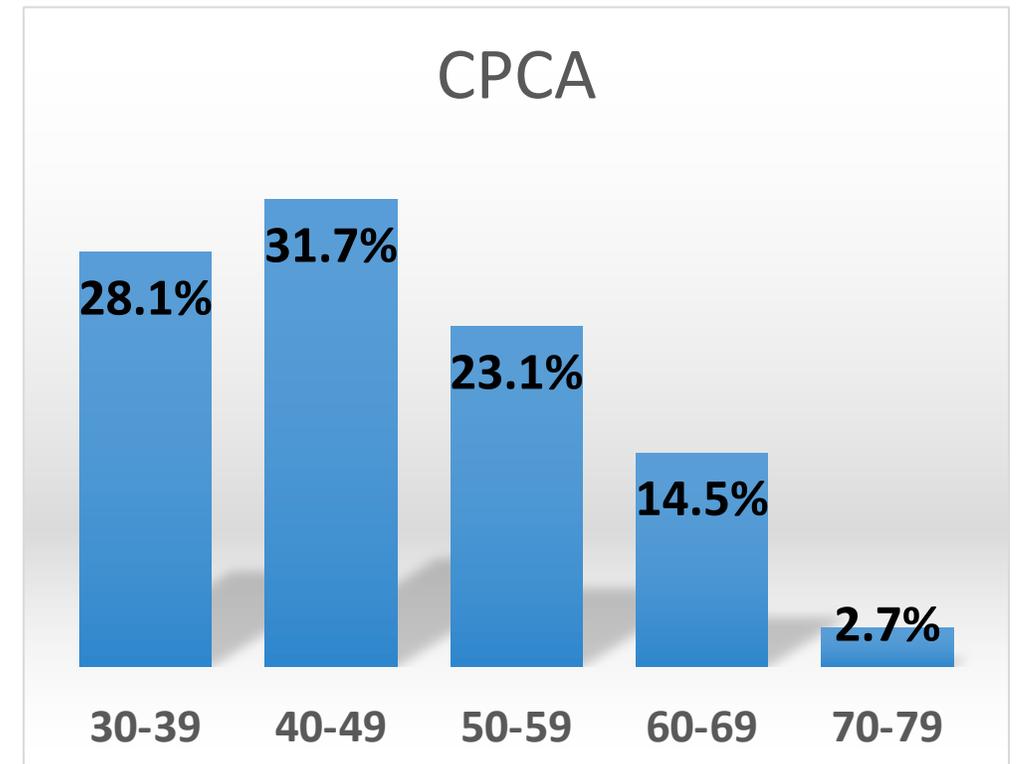
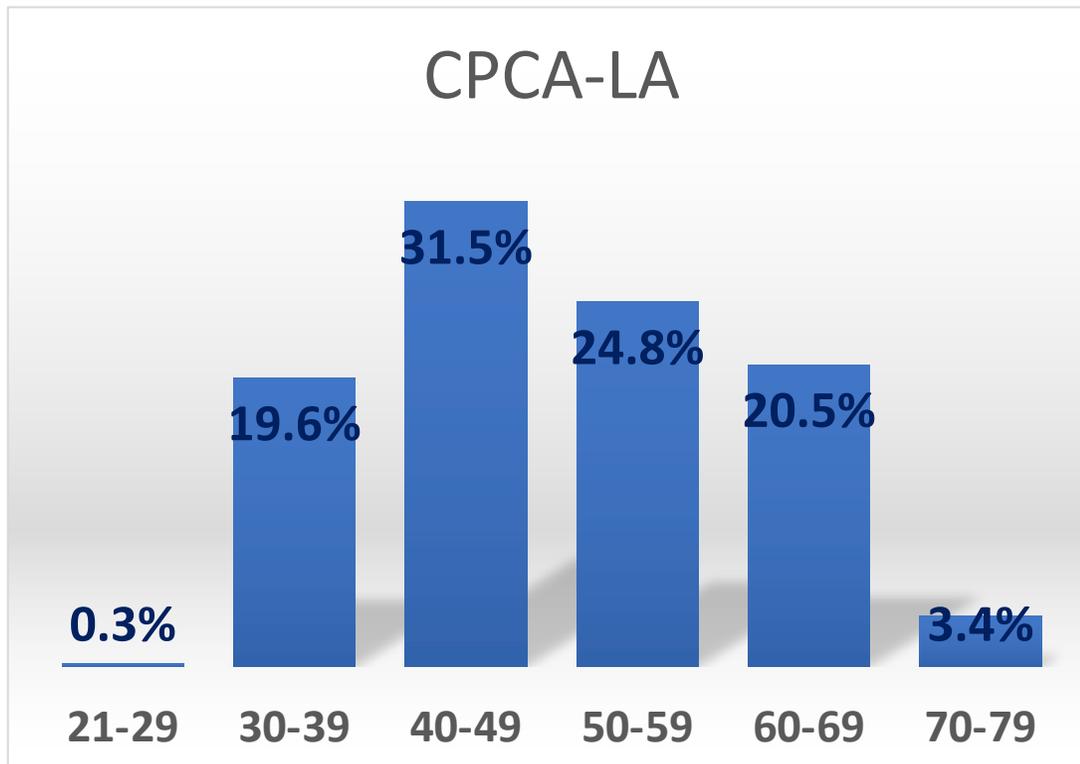


CPCA (n=338)

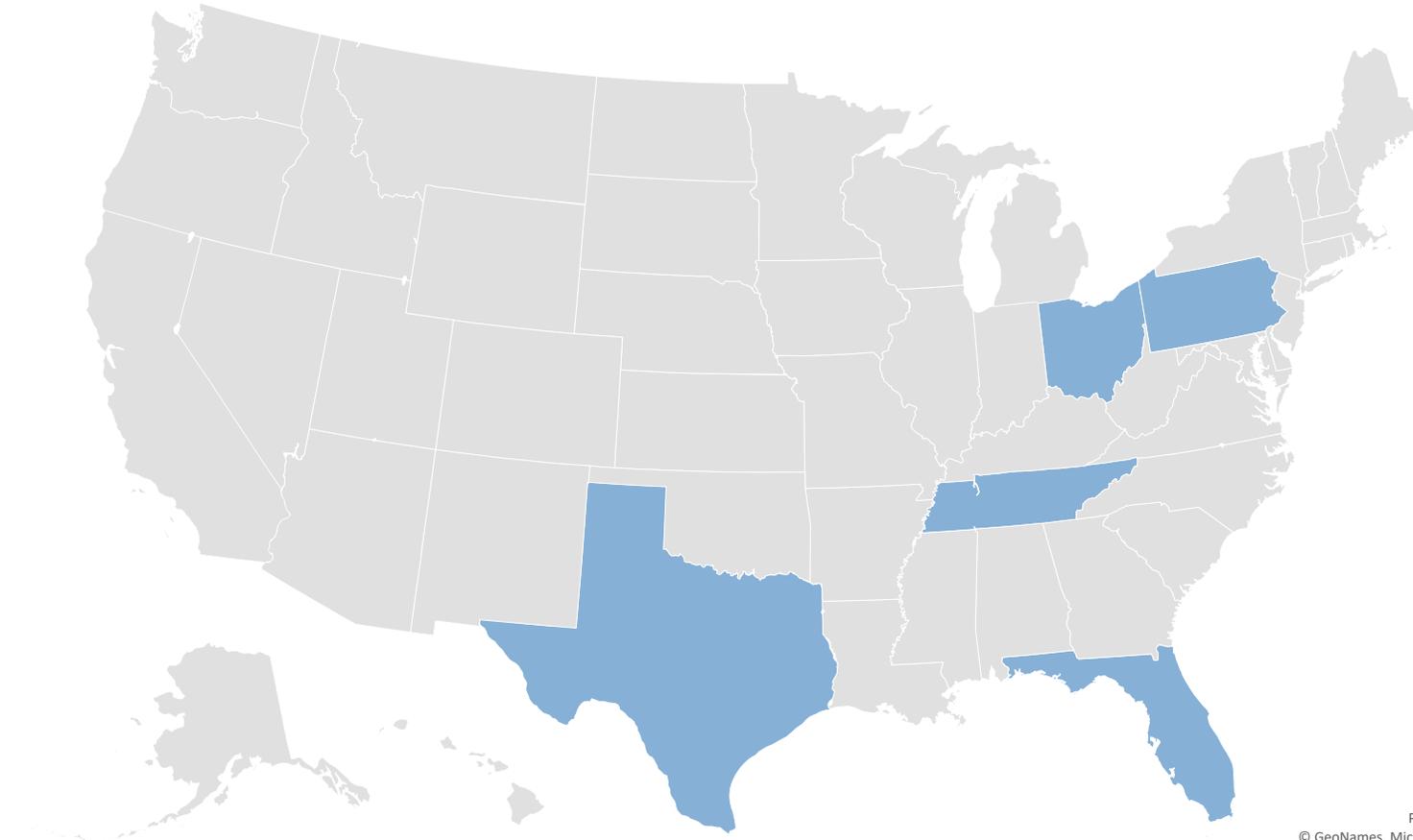
■ Female ■ Male



Age Range

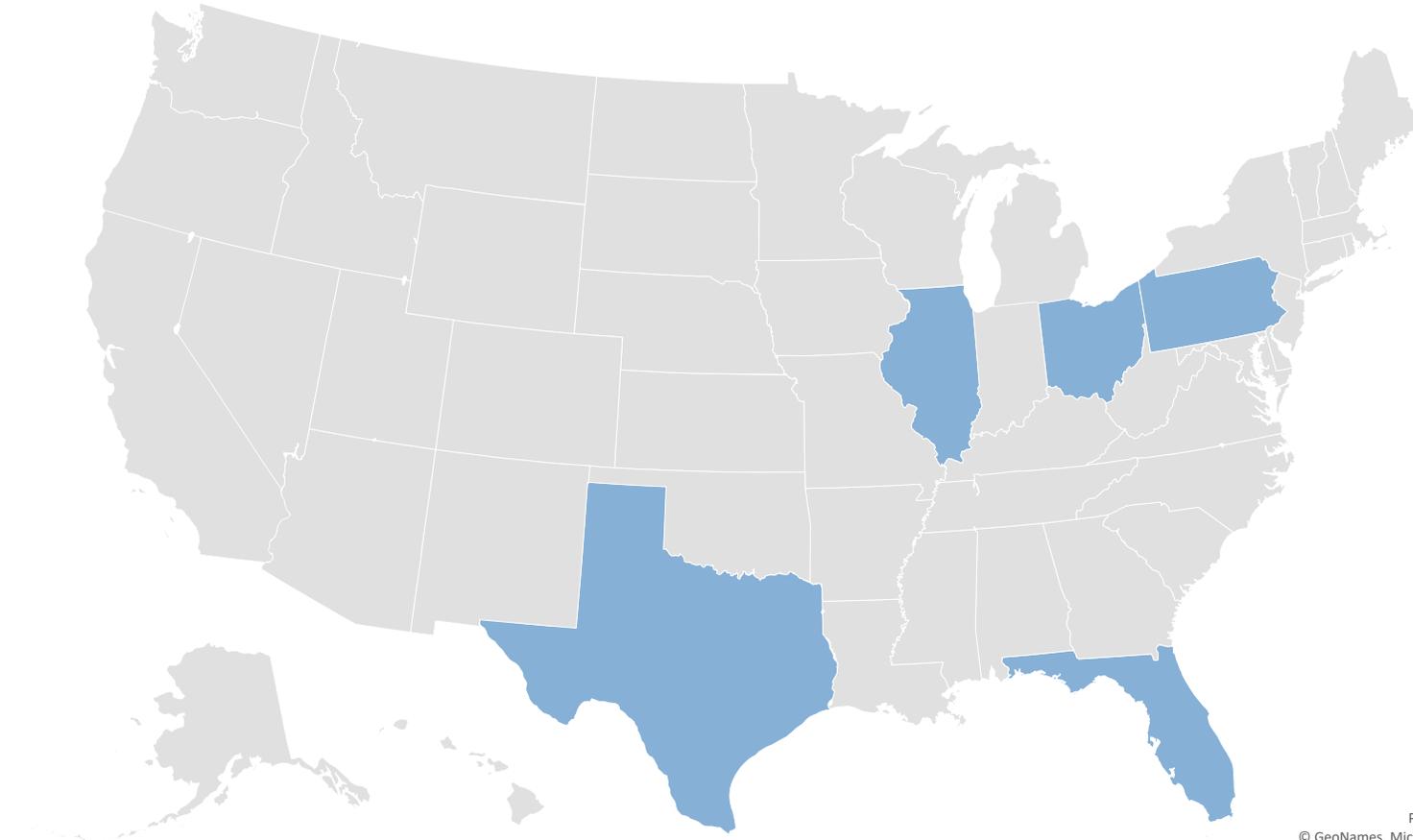


CPCA-LA Group Geographic Distribution



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CPCA Group Geographic Distribution



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CPCA-LA Specifications

Duration: 12 months

- Start date: 4/4/2022
- End date: 3/31/2023

Specifications:

- 120 items, content balanced to CPCA blueprint
- 30 items per quarter; 4 quarters
- Immediate feedback: Correct/incorrect; Rationale, references
- Confidence/relevance ratings
- 1 minute/item
- No “skips”; Up to 5 repeat questions Q2-Q4
- Question History
- Scoring and Normative Data

Performance Results



First Research Question

Is the performance between the CPCA-LA and CPCA participants comparable?

Is there a difference in perceptions and attitudes between the CPCA-LA and CPCA participants?

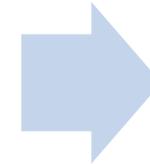
Is the CPCA-LA platform feasible, acceptable, and usable?

Performance Results (Initial LA Item Attempts Scored)

CPCA-LA
(n=441) *First Attempt*



85.7% met the performance standard (n=378 | M=562.54, SD=109.43)



14.3% did not meet the performance standard (n=63)

CPCA (n=338)



94.4% met the performance standard (n=319 | M=600.24, SD=95.80)



5.6% did not meet the performance standard (n=19)

Performance Results (Most Recent LA Item Attempts Scored)

CPCA-LA
(n=441) *Second
Attempt on
Repeat Item*



91.8% met the
performance
standard (n=405 |
M=649.43,
SD=139.72)

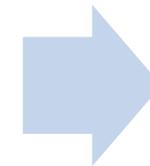


8.2% did not meet
the performance
standard (n=36)

CPCA (n=338)



94.4% met the
performance
standard (n=319 |
M=600.24,
SD=95.80)

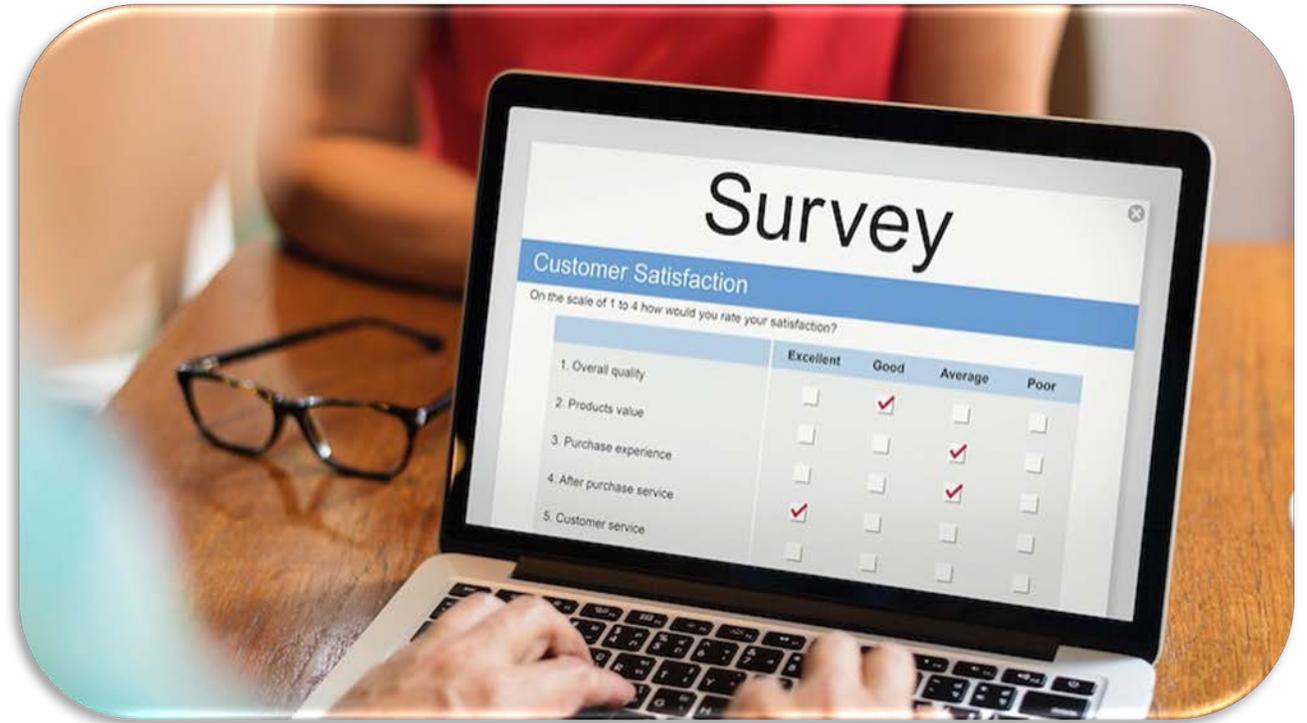


5.6% did not meet
the performance
standard (n=19)

CPCA-LA Performance Comparison: Initial response scored and most-recent response scored

- When scoring the most recent LA item responses for repeat questions answered incorrectly on the initial attempt, the mean scaled score for the CPCA-LA participants (M=649.43, SD= 139.72) was significantly higher than the mean scaled scores based on the first response (M=562.54, SD=109.43; $t(440) = 44.41$ $p < .001$).

Perception Results



Second Research Question

Is the performance between the CPCA-LA and CPCA participants comparable?

Is there a difference in perceptions and attitudes between the CPCA-LA and CPCA participants?

Is the CPCA-LA platform feasible, acceptable, and usable?

Data Collection Timepoints

CPCA-LA

- Post-quarterly assessment survey
- Final usability survey
Focus groups (optional)

CPCA

- Post-assessment exit survey

CPCA-LA vs CPCA Participant Perceptions

Final LA Survey and Post-Exit Survey Items*	CPCA-LA	CPCA
Overall, I was satisfied with my testing experience.	3.38	3.44
The CPCA/LA helps me identify my knowledge gaps.	3.16	2.86
The CPCA/LA promotes lifelong learning.	3.13	2.62
The CPCA/LA accurately reflected core knowledge related to the safe practice of anesthesia.	3.11	2.93
The level of difficulty of the CPCA/LA was well-matched to my practice experience.	2.99	2.82
The CPCA/LA helps me stay current in nurse anesthesia.	2.96	2.49
The CPCA/LA helps me provide better care to my patients by helping me maintain my core nurse anesthesia knowledge.	2.82	2.52

*1 = Strongly Disagree | 2 = Somewhat Disagree | 3 = Somewhat Agree | 4 = Strongly Agree



Hours Spent Studying

On average, how many hours did you spend PER WEEK studying for the exam that you took today during the LAST 30 days?	CPCA-LA	CPCA
A. 0	64.7% (286)	37.1% (124)
B. 1-4	31.4% (139)	41.9% (140)
C. 5-8	2.7% (12)	13.8% (46)
D. 9-12	1.1% (5)	2.7% (9)
E. 13-16	-	1.5% (5)
F. 17-20	-	3% (10)
G. >20	-	0% (0)

Preferred Assessment Modality

Which type of assessment modality would you prefer in the future?	CPCA-LA	CPCA
A. Current CPCA	5.2% (23)	46.1% (153)
B. A Longitudinal Assessment*	77.6% (343)	53.9% (179)

Third Research Question

Is the performance between the CPCA-LA and CPCA participants comparable?

Is there a difference in perceptions and attitudes between the CPCA-LA and CPCA participants?

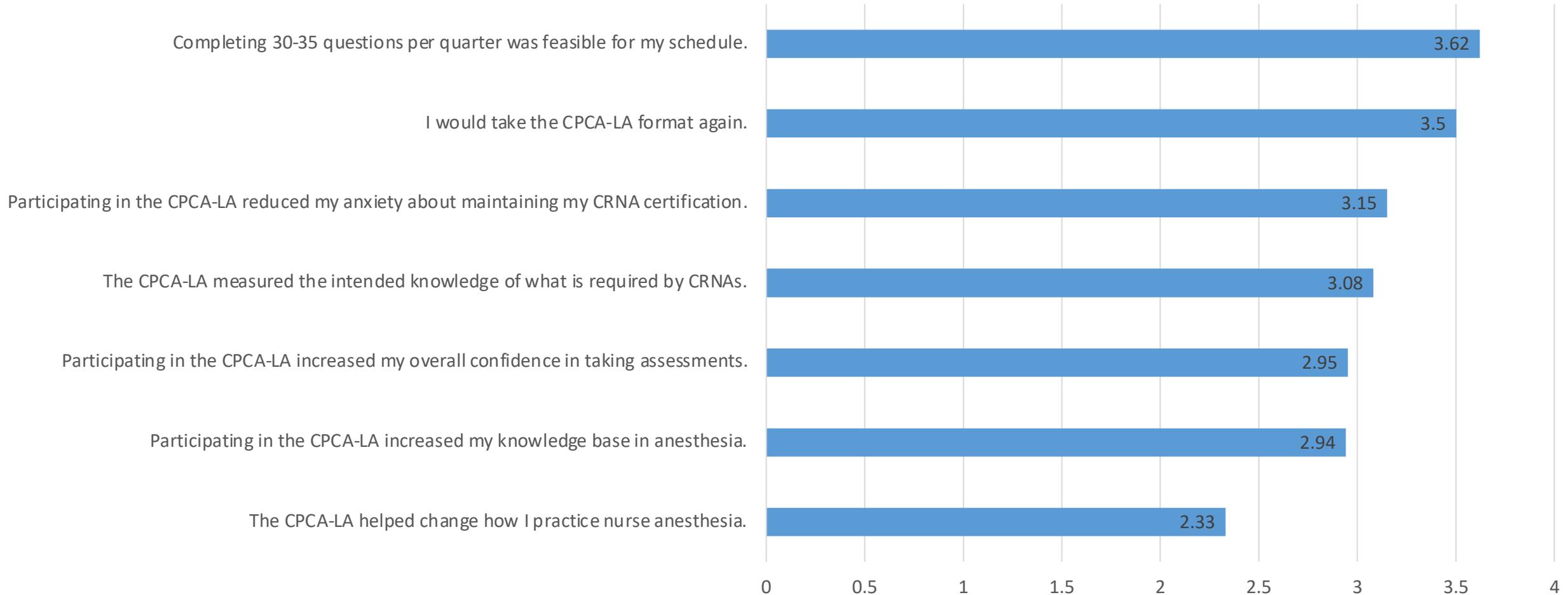
Is the CPCA-LA platform feasible, acceptable, and usable?

CPCA-LA Platform Overall Rating

4.3★
average rating

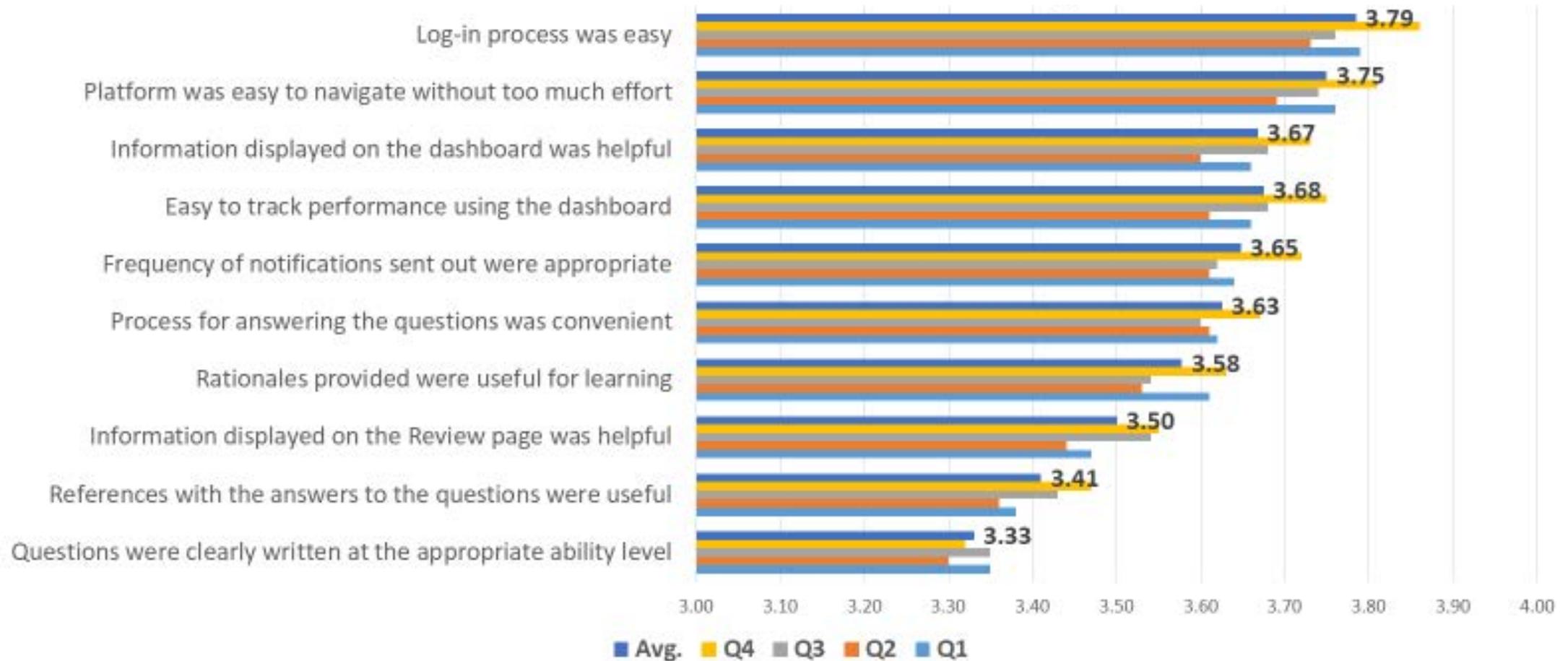


CPCA-LA Platform Perceptions and Attitudes*



*1 = Strongly Disagree | 2 = Somewhat Disagree | 3 = Somewhat Agree | 4 = Strongly Agree

CPCA-LA Platform Ratings



* 1 = Strongly Disagree | 2 = Somewhat Disagree | 3 = Somewhat Agree | 4 = Strongly Agree

Overall Usability Score*

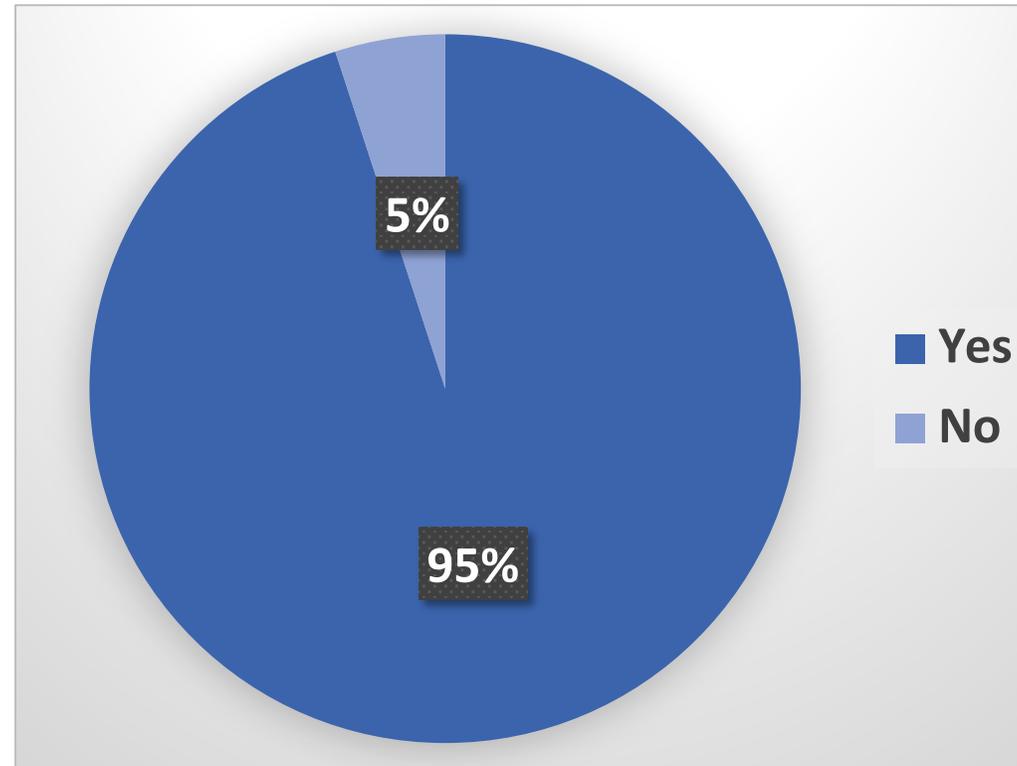
Usability score 0-100

> 68 considered above average

CPCA-LA platform usability score = 80

* Based on System Usability Scale (Source: <https://www.usability.gov/how-to-and-tools/methods/system-usability-scale.html>).

Would You Recommend the CPCA-LA to a CRNA Colleague?



Perceptions and Attitudes Findings Summary



Primary Research Aims

There was a difference in performance that was statistically significant between the CPCA-LA and CPCA participants contingent on scoring the item on the first vs. second attempt.

Average ratings are perceived higher on self-reported Agreement Likert-scales in comparison to CPCA-LA vs. CPCA participants.

Feedback of the LA platform was positive overall, with above average usability and findings suggesting it is a feasible and acceptable format.

Our Future CPC Program

- Moving from disparate cycle lengths (2,4,8) to repeating 4-year cycles with the same requirements (60 Class A, 40 Class B, and participation in LA).
- Transition from the current CPCA to use of LA in measuring knowledge of CRNAs desiring continued certification.
- Removal of Core Modules from the current program.

Questions?

